

CLAIMS

1. A method of lapping a slider which includes at least one magnetic head having a read sensor comprising:

- 5 lapping a slider which includes at least one magnetic head;
during the lapping of the slider:
producing a magnetic field around the magnetic head;
monitoring a readback signal amplitude of a read sensor of the magnetic
head which varies during the lapping of the slider; and
10 terminating the lapping of the slider based at least in part on the monitoring of the
readback signal amplitude.

2. The method of claim 1, wherein the lapping of the slider is terminated
when the readback signal amplitude is above a predetermined minimum threshold or
15 reaches its peak value.

3. The method of claim 1, further comprising:
during the lapping of the slider: monitoring a resistance of the read sensor which
varies during the lapping; and
20 terminating the lapping of the slider based on the monitoring of the readback
signal amplitude and the resistance.

4. The method of claim 1, further comprising:
during the lapping of the slider: monitoring a resistance of the read sensor which
25 varies during the lapping; and
terminating the lapping of the slider when the readback signal amplitude is above
a predetermined amplitude threshold or reaches its peak value, and the resistance is
within a predetermined resistance range.

5. The method of claim1, wherein the act of producing the magnetic field comprises producing the magnetic field with a direct current (DC).

6. The method of claim1, wherein the act of producing the magnetic field
5 comprises producing the magnetic field at a predetermined frequency.

7. The method of claim1, further comprising:
wherein the act of producing the magnetic field comprises producing the magnetic
field at a predetermined frequency; and
10 wherein the act of monitoring the readback signal amplitude comprises
monitoring the readback signal amplitude at the predetermined frequency.

8. The method of claim 1, further comprising:
wherein the act of producing the magnetic field comprises producing the magnetic
15 field at a predetermined frequency; and
performing a Fast Fourier Transform (FFT) or a Phase-Locked-Loop (PLL) at the
predetermined frequency in monitoring the readback signal amplitude.

9. The method of claim 1, further comprising:
20 during the lapping of the slider: calculating an asymmetry measurement of the
read sensor; and
terminating the lapping of the slider based on the calculated asymmetry
measurement.

25 10. A slider lapping system, comprising:
a lapping plate for lapping a slider which includes at least one magnetic head with
a read sensor;
a moving mechanism which moves the lapping plate relative to the slider;
a coil which produces a magnetic field around the slider during the lapping;

processing circuitry which is operative to monitor a readback signal amplitude of the read sensor during the lapping; and

control circuitry coupled to the moving mechanism and the processing circuitry, which is operative to cause the lapping to terminate based on the monitoring of the readback signal amplitude.

11. The slider lapping system of claim 10, wherein the control circuitry is operative to cause the lapping of the slider to terminate when the readback signal amplitude is above a predetermined minimum threshold or reaches its peak value.

10

12. The slider lapping system of claim 10, further comprising:

the processing circuitry being further operative to monitor a resistance of the read sensor during the lapping; and

the control circuitry being further operative to cause the lapping to terminate based on the monitoring of the readback signal amplitude and the resistance of the read sensor.

13. The slider lapping system of claim 10, further comprising:

the processing circuitry being further operative to monitor a resistance of the read sensor during the lapping; and

the control circuitry being further operative to cause the lapping to terminate when the readback signal amplitude is above a predetermined amplitude threshold or reaches its peak value, and the resistance is within a predetermined resistance range.

14. The slider lapping system of claim 10, further comprising:

the coil being driven to produce a magnetic field with a direct current (DC).

15. The slider lapping system of claim 10, further comprising:

the coil being driven to produce a magnetic field at a predetermined frequency.

16. The slider lapping system of claim 10, further comprising:
the coil being driven to produce a magnetic field at a predetermined frequency;
and

5 the processing circuitry being further operative to perform a Fast Fourier Transform (FFT) or a Phase-Locked-Loop (PLL) at the predetermined frequency for use in monitoring the readback signal amplitude.

17. The slider lapping system of claim 10, further comprising:
10 the processing circuitry being further operative to calculate an asymmetry measurement of the read sensor; and
the control circuitry being further operative to cause the lapping to terminate based on the asymmetry measurement of the read sensor.

15 18. A method of lapping a slider which includes at least one magnetic head having a read sensor comprising:

lapping a slider which includes at least one magnetic head;
during the lapping of the slider:

producing a magnetic field around the magnetic head;
20 monitoring a readback signal amplitude of a read sensor of the magnetic head which varies during the lapping of the slider;
generating an asymmetry measurement based on the monitored readback signal amplitude; and
terminating the lapping of the slider based at least in part on the monitoring of the
25 asymmetry measurement.

19. The method of claim 18, wherein the lapping of the slider is terminated when the asymmetry measurement is within a predetermined range.

20. The method of claim 18, wherein the act of producing the magnetic field comprises producing the magnetic field with a direct current (DC).

21. The method of claim 18, wherein the act of producing the magnetic field
5 comprises producing the magnetic field at a predetermined frequency.

22. The method of claim 18, wherein the asymmetry measurement is based on
 $(A - B)/(A + B) = -3\pi/4 \text{ Peak}(2f_0)/\text{Peak}(f_0)$, where A is a peak positive readback signal
amplitude, B is a peak negative readback signal amplitude, and f_0 is frequency.

10

23. A slider lapping system, comprising:
a lapping plate for lapping a slider which includes at least one magnetic head with
a read sensor;
a moving mechanism which moves the lapping plate relative to the slider;
15 a coil which produces a magnetic field around the slider during the lapping;
processing circuitry which is operative to calculate and monitor an asymmetry
measurement from the read sensor during the lapping;
control circuitry coupled to the moving mechanism and the processing circuitry,
which is operative to cause the lapping to terminate based on the monitoring of the
20 asymmetry measurement.

24. The slider lapping system of claim 23, wherein the lapping of the slider is
terminated when the asymmetry measurement is within a predetermined range.

25. The slider lapping system of claim 23, wherein the producing of the
25 magnetic field comprises producing the magnetic field with a direct current (DC).

26. The slider lapping system of claim 23, wherein the producing of the
magnetic field comprises producing the magnetic field at a predetermined frequency.

27. The slider lapping system of claim 23, wherein the asymmetry measurement is based on $(A - B)/(A + B) = -3\pi/4 \text{ Peak}(2f_0)/\text{Peak}(f_0)$, where A is a peak positive readback signal amplitude, B is a peak negative readback signal amplitude, and
5 f_0 is frequency.

10

15